

# Minutes of the Joint Plan Teams for the Groundfish Fisheries of the Gulf of Alaska (GOA) and Bering Sea Aleutian Islands (BSAI)

November 14 - 18, 2011  
North Pacific Fishery Management Council  
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## Introduction

The Joint meeting of the BSAI and GOA Groundfish Plan Teams convened Monday, November 14, 2011 at 9:00 am at the Alaska Fisheries Science Center in Seattle, Washington. Approximately 40 members of the public and agency staffs attended the joint session.

## Agenda

Jim Ianelli reviewed the agenda. He noted that Craig Faunce is participating for the GOA Team as a provisional member until he is formally nominated by the NMFS AFSC, recommended by the SSC, and appointed by the Council next year. Loh-lee Low announced that he had resigned from the BSAI Team and is working on other fisheries management issues. Jane DiCosimo, on behalf of the Council, presented

a plaque to Loh and thanked him for more than 30 years of service on the BSAI Team. The BSAI Team will schedule election of officers at the beginning of its meeting on Monday afternoon.

Jane updated the Teams on the status of the GOA Halibut Prohibited Species Catch (PSC) Limit analysis. In December 2011, the Council changed the process for revising the GOA halibut PSC limits. Instead of its original action to consider revising the PSC limits through GOA harvest specifications, the Council will consider amending the GOA Groundfish FMP to remove setting halibut PSC limits from the harvest specifications process and set them through federal regulations; as is currently done in the BSAI. The GOA Team will address the proposed action on Friday. Initial review and final action for the GOA FMP/regulatory amendments is scheduled for February 2011 and April 2011, respectively, for mid-2013 implementation.

## **Sablefish**

Dana Hanselman presented the Alaska sablefish assessment. There were no model changes to the assessment. The Plan Teams agreed with the authors' recommended 2012 ABC of 17,240 t and 2013 ABC of 17,019 t (combined BSAI and GOA areas).

Normalized abundance indices indicate divergent trends between the different data sources. The fishery abundance index and the trawl survey biomass index decreased while the longline survey index continued to increase. Regional estimates of longline survey RPNs indicate that the survey increase is due primarily to the Central GOA estimates, since estimates in the Bering Sea, Western GOA and Eastern GOA all decreased slightly. □ A higher than average number of age 3 sablefish (sizes 41-49) was observed in the size compositions for both the trawl and longline survey and indicates an above average 2008 year class. Killer whale depredation decreased slightly in the Bering Sea compared to 2009, allowing for the inclusion of the Bering Sea relative abundance estimate. Sperm whale presence in the GOA has increased over time; however, depredation is difficult to identify and remains variable over the time series.

Fishery CPUE trajectories by area and source (observer versus logbook) generally follow each other with a drop in recent years for overall average by area. A short discussion took place between Plan Team members and Dana on logbook data availability, standardization, and hook spacing to determine whether overlap existed between observer data and logbook data. There is likely some overlap and Alan Haynie suggested looking at vessel identifiers to determine stability of the logbook operations. Dana responded that ABL has an NRC fellow funded to research the fishery CPUE and improve that time series.

At the request of the SSC, differences between gully stations and slope stations in the longline survey and evaluation of the IPHC surveys were investigated. Gully and slope station trends are similar, except that gullies are more variable and with a slight delay in tracking of year classes in the slope stations in more recent years. The fishery is more concentrated on the slope than in the gullies, although the degree of concentration in gully areas is variable. Dana also showed the NMFS Bering Sea slope and Aleutian Island trawl survey time series. The Aleutian survey is highly variable with relatively high CVs in the early part of the time series, while the Bering Sea is generally more precise with biomass estimates at around 10,000 t on average. The IPHC survey RPN trends match the sablefish longline survey fairly well, except that the trends diverge in the most recent years. A member of the public asked if there was a correlation between the halibut catch on the survey and the sablefish catch, suggesting that this could be something to consider with respect to hook competition.

Dana described the model fit to the various data sources. The fit to the domestic RPN and fishery RPW was somewhat of a compromise due to different trajectories between the two data sources. The largest part of the increase in the objective function total (relative to last year) was from the fit to new trawl survey and trawl fishery length compositions. There was also an increase in survey catchability. Spawning biomass projections for 2012 are up slightly from last year's projections for 2012. The retrospective pattern has apparently dissipated since last year suggesting that recent data has moderated previous patterns. Recruitment estimates indicate strong 1997 and 2000 year classes. Also, the 2008 year class may be slightly above average. When survey age compositions become available next year estimates of the 2008 year class should become less uncertain. Compared to the 2010 model, the 2011 model provides higher estimates for the five most recent year classes.

Dana presented an alternative retrospective analysis in response to Mike Sigler's request to apply the current model configuration. In this retrospective analysis, he sequentially removed one-year of data and re-ran the current model. The ABCs from 2003-2011 from the retrospective analysis are similar to those that were historically specified but were a little lower in 2003 and 2004. The main model changes were growth updates, introduction of a split-sex model, and removal of double-counted weight-based and number-based survey abundance indices. Despite model changes, the results are consistent.

Last December, the SSC asked authors to "incorporate their best estimate of total landings that will occur for the entire year." For this year's catch, the sablefish authors used a three-year ratio of full year catch (Jan-Dec) divided by the catch up to October of that year (9 month catch). For the next two year's projected catches they used the three-year ratio of catch to TAC multiplied by the projected ABCs. Dana showed the expansion factor estimated for several rockfish species and sablefish. Nearly all sablefish were caught by October resulting in a relatively low expansion factor for this year's catch. For projected catches, the average ratio of catch/TAC was 0.8 for sablefish. These catch estimates were used to project biomass.

Dana also summarized plans for future research. He plans to continue with the current age-structured model while research models are tested. Several CIFAR grants have been initiated to investigate various aspects of the sablefish model. Specifically, planned analyses include investigation of survey index modeling to include whale depredation, an analysis of the fishery CPUE to better model logbook and observer data, a research model to consider spatially explicit data and parameters, and a continued investigation into recruitment processes and ecosystem influences (e.g., environmental variables and the Gulf of Alaska Project). Additionally, a new maturity study will be initiated this winter by Jim Stark, with involvement from ABL personnel.

Dana presented supplemental research catch data and the estimates of incidental catch of sablefish in the halibut fishery (HFICE). There was some discussion of how the HFICE estimates were developed and potential issues for double counting. **The Plan Teams recommended that the authors consider issues for sablefish where there is overlap between the data sources in these HFICE estimates. In general, for all species, it would be good to understand the unaccounted-for catches and the degree of overlap between the CAS and HFICE estimates and to discuss this at the Plan Team next September.**

Dana then presented some slides on a whale depredation study through the Sitka Sound Science Center. The project was looking at whale creaking and its relationship with depredation on the longline survey. Generally a creak is a whale interrogating for a fish, and a creak/pause is when they found the fish and are

eating it. Preliminary results show little correlation between the catch and depredation events based on creaks. Some issues involve the relatively few number of observed depredation events when compared to the number of hooks. A spectrogram of creaks suggests that a three hour fishing haul could provide the equivalent of 9-12 hours of natural foraging effort by a whale. The whales apparently become tired after foraging near a vessel. Other issues include separating out creaks when there are more than 2 whales present. Next spring a gear experiment is planned with commercial vessels to test decoy buoys and address other issues.

Several questions were raised and answered during a general discussion. A member of the public asked about if otoliths collections were sufficient for a spatial model. Dana responded that regionally more samples would be desired. The Teams asked if the fleet is changing their behavior relative to the survey effort. The response was that the fleet seems fairly consistent over the past few years. Discussion about the application of fishery CPUE in the model centered around factors affecting the relationship to abundance, such as variability between vessels and different hook spacing practices. Recently the trajectories of the survey and fishery CPUE have diverged. However, the longline survey is given more weight in the model. Other possible issues are that the fishery index is always one year behind the survey index, and this lag may be compounded by fish being selected later by the fishery than the survey. A project is in place to refine the fishery CPUE index. There was some discussion on State catch and whether they were seeing smaller fish. It was noted that the State fishery catches some small sablefish recently but was unlikely to appear in the main fishery yet. The Teams inquired about if the independent estimates of ageing error are incorporated into the assessment model (from the manuscript by Clark et al.). The sablefish authors will investigate that information once the work has been finalized.

## **Grenadiers**

Jon Heifetz summarized the updated executive summary for the grenadiers assessment that was prepared by Dave Clausen. It will be added as an appendix to each SAFE Report. Tier 5 ABC and OFL calculations were recommended by the authors for managing these species.

Grenadiers are abundant, especially in the Gulf of Alaska, and substantial amounts are caught and discarded each year (12,000 - 17,000 t in recent years). Grenadiers are not included in the BSAI and GOA Groundfish FMPs. The Council has not yet prioritized adding grenadiers to the FMPs despite repeated recommendations by both the Plan Teams and the SSC. A discussion paper, which will explore options for managing grenadiers under the FMPs, is being prepared by NMFS AKRO for the April 2012 Council meeting. Different management approaches may be considered in the GOA and the BSAI FMPs due to different OY constraints in each FMP. The Teams appreciated the authors update of the assessment to support Council consideration of management actions to conserve grenadiers.

A member of the public questioned why this proposed action was dropped from the ACL amendment. Jane DiCosimo explained that the Council prioritized statutory requirements to implement ACLs in the groundfish FMPs by 2011 above other related management actions, such as adding grenadiers to the FMPs and more explicit treatment of uncertainty in the groundfish ABC control rules.

## **Economic SAFE**

Ron Felthoven and Ben Fissel of the AFSC Economic and Social Sciences Research Program (ESSRP) summarized the Economic SAFE Report. Ron described recent and planned improvements in the report. All of the tables from the Economic SAFE are currently available online at

[www.afsc.noaa.gov/REFM/Socioeconomics/documents.php](http://www.afsc.noaa.gov/REFM/Socioeconomics/documents.php). The ESSRP welcomes input on other information to include in future Economic SAFE documents. An online survey will be available at the above website by the end of the year.

Ben Fissel presented new work on economic indices in the Economic SAFE report. Sector indices relate changes in value, price, and quantity across species, product, and gear types to aggregate changes in the market.

## **Ecosystem Chapter**

Stephani Zador presented an update of the Ecosystem Chapter, including an updated Report Card and Assessment for the Bering Sea, a new Report Card and Assessment for the Aleutian Islands, and 44 updated contributions with 7 new contributions (a summary of key points is included in the Introduction). A few points were discussed on specific indicators:

- Stephani explained that the Report Cards are made of 10 indicators that were chosen during the workshop process, with the intent that these 10 indicators best summarize the system over time and will be tracked year-to-year.
- For Northern Fur Seal pup production, the difference between Bogoslof and Pribilof trends is likely due to differences in summer foraging habitat (shelf vs basin), since adult females and pups from both regions have the same winter habitat. Some of the increase abundances observed at Bogoslof Island is apparently due to immigration.
- The Teams noted that trends in fishing effort indices may be misleading as they represent observed effort only and hence affected by changes in levels of observer coverage. It was cautioned that unbiased measures of effort are needed.
- There was no indication by the authors or Plan Teams that the results presented here showed any specific “red flags” in the Report Cards or overall assessment with respect to this year’s harvest specifications.
- In the coming year a workshop for finding key indicators for the GOA will be conducted and incorporated for the next version of the ecosystem chapter.

## **Pacific cod**

Grant Thompson described the candidate models for this year’s specifications, which had evolved through a series of meetings and trials including a CIE review in March, a team conference in May and SSC meeting in June that produced an intermediate suite of candidates, and finally the September team meeting and October SSC meeting where the candidates for this meeting were chosen. Last year’s model was Model 1 and had these features:

- $M$  fixed at 0.34.
- Length-specific commercial selectivities for all fisheries, some forced to be asymptotic, estimated for blocks of years.
- Age-specific survey selectivity with an annually varying left limb.

- Survey catchability fixed at the value obtained in the 2009 assessment (0.77), where it resulted in the product of catchability and selectivity at 60-81 cm equal (on average) to the desired value of 0.47 in the EBS and 0.92 in the GOA. The desired values were based on a small number of archival tags.
- Assumed ageing error bias of +0.4 y at all ages.
- A single growth schedule for all years (cohort-specific in the 2009 assessment).
- Length composition data not used where age data were available (to avoid double fitting).

This year's assessment provided additional candidate models as follows:

- Model 2b in the EBS was the same as Model 1 except that pre-1982 trawl survey data were left out of the fit and Grant made a few minor but helpful housekeeping changes to the model configuration. Model 2b was fitted only in the EBS.
- Model 3 was the same as Model 2b except that ageing error was estimated internally.
- Model 3b for the EBS was the same as Model 3 except that the standard deviation of length at age was estimated internally, the mean length-at-age data were left out of the likelihood, and all length frequency data were used. In Model 3b for the GOA, there were also some constraints on survey catchability, survey selectivity, and ageing error parameters to keep the estimates reasonable and to approximate more closely the amount of survey variability estimated in the EBS.
- Model 4 for the EBS was the same as Model 3b except that all age composition data were left out of the fit (to avoid the whole issue of ageing error). Model 4 for the GOA also had a constraint on pre-1977 recruitment.

In the EBS, all of the models produced similar estimates of historical recruitment and present abundance, and similar fits to the survey biomass estimates. All of them also predicted mean length at age among younger fish in good agreement with the modes in the survey length frequencies. In the GOA, Models 1 and 3 produced similar estimates but Models 3b and 4 produced much higher estimates of abundance and estimates of historical recruitment that differed from each other and from the first two models. The higher abundance estimate by Model 3b resulted mainly from its much lower estimate of survey selectivity at 60-80 cm. In the GOA, Model 3 fitted the age data better than Model 3b, and showed more between-year variation in estimated survey selectivity.

Grant showed some graphs of variation among years in mean length at age 1. This variation adds to the variance of length at age 1 when the model is fitted, so external estimates of the standard deviation of length at age tend to be too low. For that reason Grant felt that the models that estimated the standard deviation internally (3b and 4) were superior in that respect.

Grant also reported jitter tests for all models. Convergence is still weak for some, especially in the GOA. It was questioned whether the jitter tests were meaningful, given that the jitters were scaled to the very wide bounds on the parameters. He suggested that the tests be run with the "Fballpark" penalty, which leads the parameter vector to a realistic neighborhood during the first phase of minimization, avoiding excursions to extreme regions of parameter space.

In the assessment document Grant had set out some criteria for model selection based on CIE, SSC, and other recommendations. These criteria included: (i) the model should continue to be fitted to the age composition data, (ii) the ageing error should be estimated internally, (iii) the model fit should estimate

the desired value of the product of survey catchability and selectivity at 60-81 cm (0.47 in the EBS and 0.92 in the GOA), and (iv) the model should estimate the full variance of length at age. By these standards Model 3b was the clear choice in the EBS. In the GOA none of the models had all the desired features and Grant settled on Model 3 on the grounds that it had all of the most important features.

After some discussion the Teams endorsed the author's decision to estimate ageing error internally and continue fitting to the age data. It was noted, however, that the ageing error estimates were troubling. In the EBS, both of the models that estimated ageing error (Models 3 and 3b) produced very similar estimates of the ageing error parameters, but in the GOA, Models 3 and 3b produced parameter estimates that were quite different from each other and from the EBS values. It appears that in the GOA these parameters are not well determined by the data.

The Teams also supported the practice of relying on the target values of survey catchability times selectivity at 60-81 cm to scale the abundance estimates. The empirical support for these values is not strong, but both values are plausible, they are the best external estimates available, and at this point we still need an external estimate to scale the fits. Bob Lauth reported on planned field work using a Didson sonar to investigate the vertical distribution of cod in front of the EBS survey trawl, and paired tows with the EBS and GOA survey trawls to see whether the higher-opening GOA trawl (7 m vs 2.5) catches substantially more cod in the EBS. **The Teams strongly support this research.** We feel that more information on survey catchability is needed to inform the assessment.

At the same time, **the Teams encouraged the author to try estimating survey catchability internally again.** It is possible that with the other improvements made in this assessment, catchability will be estimable, at least in the EBS assessment.

## **2012 meeting schedule**

The Teams identified the following dates in 2012 for their joint and team meetings; the date for the May 2012 meeting to discuss Pacific cod models will be selected at a future date. Jane noted that 2012 is an "on year" for the BSAI and the team will need to meet on either Monday (Veterans' Day) or Saturday to complete its assignments. The Teams will discuss future meeting dates during their separate meetings, as the federal holiday will occur in the week identified to include Veterans' Day through 2016.

September 11-14, 2012

Week of November 12, 2012

## **Adjourn**

The Teams adjourned their joint meeting at approximately 3 pm and convened separately for the remainder of the week.